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# SCIENCE NEWS LETTER

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"Tom" with Split Wing

See Page 320

A SCIENCE SERVICE PUBLICATION



## MEDICINE

# Enzymes in Heart Disease

**Physicians are now using enzymes to help diagnose heart and liver diseases. Correct diagnosis was made in 90% to 100% of cases studied.**

► PHYSICIANS CAN NOW determine quickly whether the ache in a patient's chest means coronary thrombosis or some other illness with like symptoms. Enzymes, substances that speed up chemical reactions, can be used for quick diagnosis of some types of heart disease and also hepatitis, a liver ailment.

More than 90% of coronary thrombosis cases studied were diagnosed correctly, physicians attending a symposium on Current Topics in Cardiovascular Medicine in Washington, D. C., were told.

The spectrophotometer is used to analyze blood samples of patients in a matter of minutes. Although not supplanting the electrocardiogram, the enzyme measurement method is considered more accurate.

Dr. Felix Wroblewski, Cornell Medical School and Sloan-Kettering Memorial Hospital, New York, told of breaking down enzymes into their component parts, an advance that points to future use in determining a variety of diseases even before symptoms are noticeable.

His work was done in collaboration with Dr. Kenneth Gregory, professor of microbiology, Ontario Agricultural College, Guelph, Canada.

Dr. Warren Wacker of Harvard Medical School and Peter Bent Brigham Hospital,

Boston, reported that he had had 100% success in diagnosing coronary heart disease in 99 patients, using an enzyme called lactic dehydrogenase. Elevation of the number of enzymes in the blood proved the diagnosis.

Dr. Howard Ticktin, George Washington University Medical School, used another enzyme called transaminase in the study of 201 patients with 98% accuracy.

"We can rule out the presence of serious heart attack," he said in an interview, "when the transaminase enzyme does not rise in the blood of patients. A blood clot in the lung, which requires different treatment, is sometimes discovered when a different type of enzyme rises."

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## PUBLIC HEALTH

# Anti-Radiation Chemical

► ANTI-RADIATION agents to increase chances for survival in the event of nuclear war are being sought by the U. S. Army's Medical Research and Development Command, two medical researchers from the Walter Reed Army Institute of Research, Washington, D. C., reported.



**BEETLES ON THE CARPET—A pseudo-vitamin spray, perfected by Roy J. Pence, University of California, Los Angeles, protected treated parts of a carpet against beetles.**

A drug development program, similar to that under which anti-materials were developed, is under way to find an anti-radiation agent useful for protecting man against radiation injury, Dr. David P. Jacobus and Major Michael P. Dacquisto said.

About 1,500 compounds have been evaluated for possible anti-radiation action, mainly by the U. S. Air Force Radiation Laboratory. Of this number, 56 of a specific chemical series were selected as having the best potential. The Army Anti-Radiation Drug Development Program has limited itself to this series.

The chemical mixtures most recently used in dogs are non-lethal, and a dog under their influence is able to walk around and do mild exercise, the Walter Reed researchers reported.

Dogs exposed to high levels of X-radiation, receiving the chemical protection, were provided with at least a 50% reduction in the amount of injury sustained by untreated control dogs. Chemicals were all given intravenously.

The scientists are not yet ready to administer these agents systemically to people, however. The reason is that, although the dogs have not died from the anti-radiation chemicals, they have suffered severe side reactions. One aim of the Army program of research is to eliminate these effects.

The present anti-radiation agents are effective by mouth in mice or dogs for only four to five hours. If perfected so that they may be taken safely in oral administration by man, they would prove useful as a protection to those entering an irradiated area.

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**ATOMS AT WORK—A U. S. Atomic Energy Commission exhibit, designed to show the free world the increasing importance of nuclear energy in everyday life, was opened in Lahore, Pakistan. Invitations were sent to Pakistan clubs, affiliated with Science Clubs of America. An essay contest on the subject, "What can atomic energy do for Pakistan?" is being sponsored by the U. S. Information Service for local students.**

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### PHARMACOLOGY

# Counterfeit Drug Danger

► COUNTERFEITING may be on the increase in the drug market, the Food and Drug Administration has warned druggists.

FDA Commissioner George P. Larrick urged drug retailers to report to the nearest FDA District Office immediately when a pharmacist suspects he has been offered counterfeit drugs.

Counterfeit drugs are frequently delivered in paper or pliofilm bags or other unlabeled containers, usually easily distinguishable from an authentic wholesale package, FDA said.

A survey nearing completion indicates that drug counterfeiting may be increasing, although it has existed for some years.

Counterfeit diuretics with a label copied from Merck Sharp and Dohme were seized in Washington by FDA recently. The duped pharmacist said the analysis showed the counterfeit Diuril and Hydrodiuril to be up to the legal manufacturer's standard and he added that he had paid the wholesaler in good faith.

The same counterfeiter may have sold drugs in other cities in the East, South and Midwest, FDA warned.

Commissioner Larrick said that "even though the particular batch of a counterfeit drug may have the same strength and purity of the drug it counterfeits, the counterfeiting of drugs is contrary to the public interest and is in violation of the Federal Food, Drug, and Cosmetic Act."

"This reprehensible practice poses a serious threat to the public health in that it could undermine the fundamental control over the safety and efficacy of drugs."

FDA says counterfeit drugs are manufactured for the specific purpose of being passed off to and by the retailer when he

### GENERAL SCIENCE

## Make Your Own Models Of Chemical Compounds

► MODELS OF ATOMS and molecules can be made from the current experimental unit, THINGS of science, issued by SCIENCE SERVICE.

The kit contains materials representing protons, neutrons, electrons, carbon atoms, oxygen atoms and hydrogen atoms. Instructions tell how to build five models of atoms and more than 100 models of molecules of chemical compounds.

With this unit the three isotopes of hydrogen and the two isotopes of helium can be modeled. Chemical models of water, carbon dioxide, alcohol, vinegar, anti-freeze, ether, natural gas, and many other molecules can be built. The unit includes discussion of the classification and significance of these atoms and molecules.

The chemical models unit (No. 240) is available for 75 cents each or three for \$1.50 by writing to THINGS of science, Science Service, 1719 N St., N.W., Washington 6, D.C. Membership in THINGS of science is available at \$5.00 for 12 monthly units.

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is filling prescriptions as the product of another manufacturer.

The drugs have been shipped to distributors under such false billings as "machine tools," "ceramics," "water softener" and "glass beads," and are frequently delivered to the local pharmacists by personal automobile, FDA said. Sales to the retailers are usually made on a cash basis without invoicing or other billing.

National pharmacy organizations have pledged FDA their full cooperation in detecting and eliminating drug counterfeiting.

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## ASTRONAUTICS

# Mercury Capsule Fails

**Failure of the Mercury space capsule tests will not necessarily delay NASA's manned rocket, planned for 1961. Capsule design believed not at fault.**

► FAILURE OF THE TEST SHOT of the Mercury space capsule and its pilot escape system will not "necessarily" delay putting a man in space, the National Aeronautics and Space Administration reported. NASA has scheduled a manned rocket launch for 1961.

The Mercury space craft, designed to take an astronaut safely into outer space and return him to earth, failed to separate from Little Joe rocket booster 13 miles from Wallops Island, Va., where it was launched.

"If the cause of the malfunction is a minor mechanical failure, I see no reason why the Mercury Project program should be delayed," an NASA spokesman said.

The rocket and space craft landed in 70 feet of water after rising to an altitude of 3,000 feet.

At launch, Little Joe and the Mercury capsule weighed 40,000 pounds. Together

they had the height of a building more than four stories high, about six and a half feet in diameter at the base. Even with the fuel burned out, the space team weighs more than 20,000 pounds.

Had the test been a complete success, there still would have been further test launches with animal passengers before man tried. A shot with a chimpanzee had been among those considered.

Little Joe rockets have been used with success in testing similar escape systems, but this was the first try with a Mercury craft identical to the one which is supposed to carry a Mercury astronaut aloft next year.

However, NASA, at this time, does not believe that the failure is due to a fault in capsule design. If the design should be at fault, this will be a serious setback to the United States program for manned space flight.

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## STRONAUTICS

# Three Men to Orbit Moon

THE UNITED STATES has yet to launch a man into space but plans to put three men into orbit around the moon and bring them back to earth by 1968.

The design of the lunar vehicle, called Apollo, has not yet been settled, Dr. Frederick R. Riddell, specialist in space vehicle design for Avco Research and Advanced Development Division, Wilmington, Mass., reported. Avco is working on Apollo design for the National Aeronautics and Space Administration. Dr. Riddell was in Washington, D. C., to address the sixth session

of the Space Research and Technology Institute at the University of Maryland.

"The shape of the Apollo vehicle will depend upon the path it takes," he said. Dr. Riddell favors a slender, bullet-shaped design as the best shape to solve the problems of intense heat involved in re-entry from a distance as far as a circumlunar orbit.

The main obstacle to solution of the heat problems involved in the re-entry of the future Apollo is that there is no test facility on earth to duplicate temperature



HAWKEYE SCOUT PLANE WITH "TABLETOP" DOME

conditions of re-entry from the scheduled trip around the moon and back.

Apollo will represent a "marked departure" from the Mercury capsule that will be used to launch a man in space sometime next year, according to the schedule of NASA.

"The Mercury capsule is purely ballistic. Once it is in launch, it is beyond control."

Dr. Riddell said: "The Apollo will be designed to have the maneuverability the Mercury capsule lacks."

Present plans are to supply maneuverability with small rudders.

The great problem of protecting man from the heat to which the exterior of Apollo will be exposed both in launch and return may be solved by combining in various areas of the vehicle new materials, plastic and ceramics, to draw heat away from the ship. The way to accomplish this is known, the Avco specialist said.

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## ROCKETS AND MISSILES

# Explorer VIII Launched To Study Ionosphere

► EXPLORER VIII has been launched for exploration of the ionosphere in an orbit about 258 miles up at its closest point and 1,423 miles when farthest away.

The satellite weighs 90 pounds and will be used to study the ionosphere in an attempt to find out why it changes from day to day.

The ionosphere consists of ions, atoms stripped of one or more of their electrons by radiation.

The ionosphere makes long-range television and radio possible by bouncing the long waves back to earth.

Scientists hope that information from Explorer VIII will lead to improvements in radio and television equipment.

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## AERONAUTICS

# Hawkeye Navy Plane Features "Flying Brain"

► A SCOUT PLANE, the W2F-1 Hawkeye, has been developed to protect U. S. Navy task forces from airborne attack.

The plane, built by Grumman Aircraft Engineering Corporation, Long Island, N. Y., is able to detect and evaluate attacks in time for successful interception of attacking aircraft by use of an airborne tactical data system (ATDS).

This system consists of an improved auto-detection radar and airborne computers, a memory and high speed data link system.

The automation in this system exceeds human capabilities in collection, storage and relaying of information.

However, whenever necessary, the crew can make its own command decision.

The Hawkeye features a revolving rotodome that can be raised and lowered on top of its fuselage. The dome holds the antenna for its high resolution radar.

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## PSYCHOLOGY

# Brain Sorts Memories

► THE PART OF THE BRAIN in which a memory is stored depends upon the type of memory. If an incident involves sight more than the other senses, the memory is stored near the brain part responsible for visual sensation.

Dr. Wilder Penfield of McGill University, Montreal, Can., reported in a lecture at the National Institutes of Health in Bethesda, Md., that he had electrically stimulated the temporal lobes, or interpretive cortex, in the brains of epileptic patients during operations.

He found not only that the storage place depends upon which of the five senses was used most for the original experience, but also found that electrical stimulation during an operation can evoke only certain types of experiences.

The times of hearing music, of watching or hearing the action and speech of others are the experiences recalled most frequently when the temporal lobe is electrically stimulated.

Other types of memories are absent.

## PSYCHOLOGY

# Studies Teachers' Traits

► THE SIGNIFICANT PERSONALITY traits of teachers are probed in an eight-year study just published by the American Council on Education entitled "Characteristics of Teachers."

The author, David G. Ryans, collected information on the traits of 6,000 teachers in 1,700 elementary and secondary schools while he was professor of education at the University of California, Los Angeles.

In one of the major studies, Mr. Ryans, who now heads the department of educational psychology at the University of Texas, found that teachers who rated high in their classroom performance, generally thought well of other people's behavior and motives.

They also showed strong interest in literature and the arts, participated in school and outside activities and considered themselves ambitious and initiators.

By contrast, teachers rated low were on the average more critical of others, emphasized exactness and "practical things," and preferred activities that did not involve close personal contact.

Comparing the characteristics of women and men teachers in secondary schools, Mr. Ryans found that women tended to be more friendly, responsible, stimulating and democratic, whereas the men were more stable emotionally.

Single teachers, both men and women, rated higher in responsible, business-like classroom behavior and verbal intelligence than their married colleagues, but lower in emotional stability and stimulating teaching.

Mr. Ryans' study is the first comprehensive investigation of teacher behavior. But,

incidents of doing things for oneself, of speaking or of writing messages or adding figures are not recorded. Nor are times of eating and tasting food, sexual excitement or experience, periods of painful suffering and weeping.

"Modesty does not explain this silence," Dr. Penfield said.

His conclusions are based on 39 selected operations for epilepsy during which the patient's temporal lobe was electrically stimulated, and on 55 similar examples of recall by epileptic patients during temporal lobe seizures. All patients were subject to temporal lobe epilepsy, which made response to stimulation easier.

No one has tried to produce temporal lobe responses in normal individuals, and Dr. Penfield said he hoped no one every would try.

It is clear enough from these observations, he said, that "we are activating a normal mechanism of the brain. We should try now to understand how the mechanism is employed in normal living."

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other Navy men. Hazardous environment and isolation are the explanation, Capt. Hedblom said. Apparently, getting away from "togetherness" has its penalties as well as its advantages, he acknowledged.

There is an absence of acute upper respiratory infections in winter in Antarctica, except for rare occasions, records show. Capt. Hedblom said these occurred invariably, in his experience, when a box of clothing from the mainland was opened, "particularly if it contained any furs."

Snow blindness, once a problem in the snow-covered continent, is now a thing of the past. Properly prescribed snow glasses have prevented this problem. Capt. Hedblom said that no incidence of snow blindness in his experience had ever resulted in permanent eye damage. Sight generally was restored in from 24 to 48 hours. The only effect, and that was temporary, he said, was "a greater photosensitivity to light."

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## PSYCHOLOGY

# Tension's Danger Signals Described in Pamphlet

► DOING SOMETHING for somebody else benefits a tense person whose attention has been dangerously fixed on himself.

"Tensions—and How to Master Them" is the new 25-cent pamphlet published by the Public Affairs Committee in New York. In it, Dr. George S. Stevenson and Harry Milt of the National Association for Mental Health point up the danger signals, causes and remedies when tension gets out of hand.

If feelings of inferiority, inadequacy and doubt become frequent and severe, they say you are suffering from needless tension. In addition to doing something for somebody else, these suggestions are offered to relieve a moderate case of tension.

Talk it out, escape for a while, take one thing at a time, get rid of your anger, stop driving for superiority and, even when you are right, give in sometimes.

The authors say that anxiety and tension are often felt together because anxiety acts as a trigger that sets off the tension. They define anxiety as the uneasy feeling you get in anticipation of a threat, whereas tension is the disturbed and upset feeling you get when your body mobilizes to deal with a real or imaginary threat.

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## MEDICINE

# General Practitioners Perform 60% of Surgery

► MORE THAN 60% of the surgery being done in the United States is by men who are essentially general practitioners rather than trained surgeons.

Dr. I. S. Ravdin, University of Pennsylvania professor of surgery and incoming president of the American College of Surgeons, assailed the practice that permits a state medical license alone to qualify large numbers to do surgery without adequate training.

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## SURGERY

# Plastic Pipe in Surgery

► THE OLD SURGICAL TRICK of hooking up a drainage pipe between spine and abdomen is making a comeback as a treatment for hydrocephalus, or water on the brain.

The technique of draining excess cerebrospinal fluid into a body cavity or vessel from which it can be absorbed was first practiced about the turn of the century. Doctors used all kinds of materials for the drainage tubes, but none could be tolerated by body tissues.

In 1927 the technique was abandoned, and not until 20 years later, when plastic tubing made its appearance was there any serious attempt to revive the technique.

The surgical procedure consists of tapping the fluid-filled, hollow spaces of the spine, continuous with those in the brain, and channeling the fluid to the ureter, lung cavity, abdominal cavity, jugular vein or any other appropriate site.

Dr. A. R. Taylor of Royal Victoria Hospital, Belfast, Ireland, and Dr. J. R. Milliken and P. P. Davison of the Belfast Child Guidance Clinic report that of eight

infants operated on in this manner in 1952, five survived.

Although there were some difficulties in the first years, the physical, emotional and intellectual status of the survivors are now within the normal range. Four of the children have I.Q.'s of 100 or above. The fifth child moved to Canada, and her I.Q. is not known.

Reporting in the British Medical Journal, Nov. 5, 1960, the researchers site one set of statistics for untreated hydrocephalics indicating that 54% die at an early age, 30% have I.Q.'s of more than 50 and are presumed educable, and only 6.5% have I.Q.'s over 100.

Although it is difficult to tell whether and when to operate, the researchers believe an infant's chances for normal survival are good if he lives through the postoperative period and if the drainage tube can be kept unclogged for two or three years.

At some time during this period, balance between fluid production and absorption will probably be achieved.

\* Science News Letter, 78:327 November 19, 1960

## MEDICINE

# Eyes and Reading Ability

► IF JOHNNY CAN'T READ, it may be because his "controlling" eye is on the opposite side of the hand he uses most.

Symptoms of poor visual imagery and memory, reversals in reading and writing patterns and mirror writing are then apt to occur. Relief of these symptoms and of stuttering can be accomplished by corrective glasses or limiting hand actions to the corresponding hand.

These findings were cited as among the eye problems of children under 12 by Dr. Owen C. Dickson of the University of California Medical School, Berkeley, at the American Public Health Association meeting in San Francisco.

"Ideally," Dr. Dickson said, "all children should have the benefit of a complete eye examination before school age."

He noted that some eye defects will be pronounced by the age of five that corrective measures may not succeed. Detection of a tumor, for example, although requiring immediate treatment, is rarely accomplished in school-age children.

Prevention of injuries to the eyes, he said, would include outlawing of B.B. guns in populated areas. Education of parents and the community about the dangers of slingshots, rubber bands, paper clips, scissors, pencils and other sharp objects in children's hands should be stressed.

"Careful handling and placement of liquid, such as cleaning fluids, paints, plant sprays, detergents, drugs and aerosol bombs can prevent many childhood eye injuries," Dr. Dickson stressed.

First aid treatment for any foreign

liquid entering the eye should be prompt irrigation with water. The eye can be held open under a faucet, or water can be poured into the eye from a glass.

Dr. Dickson said the use of ointment or eyedrops is to be discouraged because these applications may complicate later care.

\* Science News Letter, 78:327 November 19, 1960

## VITAL STATISTICS

# Humanity to Annihilate Itself on Nov. 13, 2026

► DOOMSDAY IS SET for Friday, Nov. 13, 2026. On this date, three mathematicians have calculated, human population will approach infinity, if it grows as it has grown in the last 2,000 years, and will promptly annihilate itself.

With their calculations based on paradise-like conditions—no environmental hazards, unlimited food supply and no detrimental action between elements—the mathematicians believe their prediction of doomsday is accurate within ten years.

In studies partly supported by a grant from the National Institutes of Health, Bethesda, Md., Heinz von Foerster, Patricia M. Mora and Lawrence W. Amiot of the University of Illinois, Urbana, show that, with the proper figures, Charlemagne could have predicted doomsday accurately within 300 years.

Elizabeth I of England could have predicted the critical date within 110 years, and Napoleon within 30 years.

"Today, however, we are in a much

better position, since we are required to extrapolate our evidence only four percent beyond our last point of observation: we can predict doomsday within approximately ten years."

While the optimists consider growing population no problem because they believe food technology advances will provide for the masses, and the pessimists argue that there is a limit, the Illinois mathematicians state in Science, 32:129, 1960, that both are wrong.

The principle of "adequate technology" has held for 100 generations and can be expected to last at least three more. But "our great-great-grandchildren will not starve to death. They will be squeezed to death."

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## AGRICULTURE

# Walkie-Walkie Helps Farmers Trace Sheep

► AUSTRALIAN FARMERS, with more than 100,000,000 sheep scattered over their vast sheep stations, no longer have to worry where their flocks have strayed. The sheep tell the farmer exactly where they have gone.

A tiny radio transmitting set, developed by the Commonwealth Scientific and Industrial Research Organization, is strapped to the back of the sturdiest sheep in a flock and sends out a periodic "bleep" to be picked up by the farmer on his direction-finder set.

Since sheep always follow their leader, the farmer knows where all his sheep are at that time.

Because more than 10,000,000 of the 40,000,000 lambs born in Australia each year die in the first few months of their lives, knowledge of the whereabouts of the flocks is of vital financial interest to the farmer. The same information is equally important at shearing time.

\* Science News Letter, 78:327 November 19, 1960



**SHEEP "TALKS" TO FARMER**

## ASTRONOMY

**Faintest Star Found In Southern Sky**

► THE FAINTEST STAR known has been discovered. The sun is more than 2,000,000 times brighter than this star, invisible except on the most sensitive photographic plates.

The star, which is about 30 light years away, was discovered by Dr. W. J. Luyten of the University of Minnesota. A light year is approximately six million million miles. Closest star to the earth is Alpha Centauri, four and a third light years away.

Dr. Luyten reported to Harvard College Observatory, Cambridge, Mass., that the star is very red. It was found on a red photographic plate but was invisible on a blue plate of the same area of the sky, photographed as part of the Mt. Palomar-National Geographic Society sky survey. The star is estimated to be a dwarf star of 20.5 magnitude.

A star's color indicates its temperature, and also the elements present. Blue giant stars are the hottest and brightest, red stars are the coolest and dimmest. The sun, a yellow star, belongs between these two categories.

Astronomers do not know how small this star is, and they expect about a year will be needed to determine its size. It is located in Pisces, the constellation of the fishes, which can be seen in the southern sky during the early evening.

Dim stars help astronomers relate brightness of stars to their masses.

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## ZOOLOGY

**Panama Howler Monkeys Have Their Noses Counted**

► LIKE 180,000,000 AMERICANS, the howler monkeys of Barro Colorado Island, Panama Canal Zone, have just had their noses counted. This is the fifth census in 30 years, the Smithsonian Institution reported in Washington, D. C.

The chief census taker is Dr. C. R. Carpenter, professor of psychology at the Pennsylvania State University, University Park. With the help of six associates, Dr. Carpenter counted 814 of these big, reddish-mantled primates, best known for their dawn chorus of roars that sound like a combination of rumbling thunder and the bray of a donkey.

His latest study, which includes motion pictures, has prompted Dr. Carpenter to state that closer study of the ways of these creatures might serve as a conceptual bridge of sorts between the biological and social science fields. Their brains might be a bridge between the realm of lower mammals and the great apes or even man.

The howler's society might also lend a few pertinent facts about the forces that regulate population—facts that could be applied to solving human population explosion problems.

The howlers themselves are a neighborly lot, very socialized, and perhaps even have a distorted sense of humor. They

have wrestling matches and mock fights, but these seldom develop into real fights, even during the mating season. There is, after all, little occasion for strife, the Penn State researchers report. Food, consisting of leaves and fruits, is plentiful and is seldom disputed by any other species.

These tree-top denizens never voluntarily come to the ground, and have mastered their wind-tossed, rain-drenched abode about as thoroughly as have fishes the sea or birds the air.

In groups of three to 45, the howlers travel defined paths through the branches and over networks of vines. Groups often travel single file, an adult male at the front followed by several female and juveniles, with males bringing up the rear.

Baby monkeys ride clinging to the mother's belly until they are a little older, at which time they transfer to the rumble seat. If the mother has any trouble, one or two childless adult females stand ready to help her. Rarely does a baby fall off as its mother swings through the trees, but if it does, the father or another male retrieves it from the ground.

• Science News Letter, 78:328 November 19, 1960

## OCEANOGRAPHY

**Study Ocean Currents With Living Drift Bottles**

► MARINE CREATURES that look like tiny, transparent beer kegs have been used as "living drift bottles" in a study of the ocean currents off California conducted by two scientists at the University of California's Scripps Institution of Oceanography, La Jolla.

Called *Doliolum denticulatum*, the animals rarely grow more than three-eighths of an inch long. The doliolids are plentiful in the central oceans and also off Baja California, the scientists reported to the Office of Naval Research.

They swim only feebly, but have been found as far north as San Francisco, which is the equivalent of a baby's crawling 25,000 miles. Discovering the doliolids so far north is further evidence of the differences in prevailing ocean current patterns during periods of warm and cool water in the Pacific Ocean.

• Science News Letter, 78:328 November 19, 1960

## FOOD TECHNOLOGY

**New Method Freezes And Dehydrates Food**

► VACUUM FREEZE-DRYING, a new food processing method, is being made available for trial purposes by F. J. Stokes Corporation's laboratory facilities in Philadelphia. By this method, water is extracted from the foods to be preserved through freezing by reducing pressure in a vacuum container at low temperatures. The extracted water is changed into a gas, and the food is frozen, free of ice crystals. Nearly 50 foods, including meats, fruits, juices, vegetables and seafoods, have been successfully processed in the Stokes laboratory by freeze-drying.

• Science News Letter, 78:328 November 19, 1960

## IN SCIENCE

## ASTRONAUTICS

**Bags, Legs and Rockets Tested for Landing**

► HOW CAN a manned space craft be landed without turning it into a coffin? How did the United States and Russia land animals after a trip in orbit? How will the U. S. land our manned space craft?

The National Aeronautics and Space Administration is investigating several strange ways to cushion landing shock. NASA scientists say interior "cushions" of a combination of semirigid plastic and aluminum honeycomb can absorb some of the jolt—but not all of it.

Therefore, the scientists are studying landing bags, bending legs, braking rockets and water.

They will use the easy water technique—water is softer than land so a floatable capsule is directed to drop into water—with the Mercury man-in-space project.

The bags studied for later use on land are of several types. One kind, a flattened round bag, has eight compartments each with a blowout patch so that air can escape from the bag, thus cushioning the space craft without bouncing it.

A vertical-cylinder bag and a spherical bag have also been tested. The bags could be carried at the base of the space craft but not blown up until needed for landing.

NASA has also tested metal legs that would bend more during impact and thus ease the craft's landing. The metal legs would be fixed between the craft itself and its heat shield. This method has been tested in simulated landings on concrete.

A few tests also have been made on a braking rocket. The results so far have been good, NASA reports.

• Science News Letter, 78:328 November 19, 1960

## DENTISTRY

**Dental Study Helped By Radioactivity**

► BY MAKING teeth "momentarily radioactive," scientists have gained a more precise knowledge of the structural relationships of tooth components and of the supply lines which help keep teeth healthy.

Dr. Reidar F. Sognnaes, dean and professor of oral biology at the School of Dentistry, University of California, Los Angeles, has reported that injections of radioactively tagged minerals chemically equivalent to those in teeth have made it possible to study in more detail the structural building blocks of enamel and dentin, the chief bone-like substance of teeth.

Other important knowledge has been gained about the relationship of enamel and the saliva that bathes it and the dentin and its tissue fluids within the pulp or "nerve."

• Science News Letter, 78:328 November 19, 1960

# NE FIELDS

## PUBLIC HEALTH

## Florida Cats With Rabies Attack Human Beings

► CATS, LIKE DOGS, can get rabies, and when they do, they attack humans.

Researchers have examined 44 rabid house cats in Florida. None were known to attack other cats or domestic or wild animals. Humans bitten or scratched by the rabid cats did not necessarily contract the disease.

Apparently rabies is not limited to domestic felines; one case occurred in a bobcat. The disease has also been found in horses, cattle, bats, skunks, raccoons and foxes, as well as dogs.

Because a wide-scale vaccination program started 20 years ago has drastically reduced rabies in Florida dogs, researchers are curious about the source of infections.

Further study is suggested by the investigators, Drs. James E. Scatterday, Nathan J. Schneider, and Arthur L. Lewis of the Florida State Board of Health, and Dr. William L. Jennings of the U. S. Fish and Wildlife Service. The study, supported in part by grants from the National Institutes of Health, Public Health Service, was reported in Public Health Reports, 75:945, 1960.

• Science News Letter, 78:329 November 19, 1960

## MEDICINE

## Heart Undergoes Chemical Changes

► AS A MAN grows older, his heart muscle undergoes more change, of a certain chemical nature, than other major tissues in the body, two Canadian researchers report.

Drs. Kanaka Mori and Jean-Paul Duruisseau of the University of Montreal have measured the concentrations of sodium, potassium, phosphorus, calcium, magnesium and chloride ions present in the body tissues of rats one to 36 months old. They found that older heart muscle not only showed a decrease in all except phosphate ion, but also confirmed the loss of cardiac tissue water previously reported. This means that the concentration drop was not due to dilution with water.

"These changes in the water and electrolytes (the ions) of cardiac muscle with age may be important to the understanding of various gerontological problems," the doctors state.

The tissue showing the second greatest degree of change was the liver, where all the positively charged ions except calcium decreased as the animal grew older.

Age brought about a "striking decrease" in magnesium concentration of the aorta, where calcium showed a gradual increase.

The brain, by contrast, showed no change, and only chloride increased in the

serum of older animals. There was also little change in skeletal muscle, the type found on the arms and legs. Only potassium and calcium decreased with age.

The doctors state that the decrease in potassium and magnesium in aged heart muscle and liver "might be connected with a general reduction in cellular functions of these tissues."

Other workers, the researchers note in the Canadian Journal of Biochemistry and Physiology, 38:919, 1960, have found a "remarkable decrease" in metabolic rate in the aged heart in rats.

The doctors are now working at the Institut de Gerontologie, Hopital Notre-Dame de la Merci, Montreal.

• Science News Letter, 78:329 November 19, 1960

## DENTISTRY

## Americans Average Four Cavities Each

► AMERICANS HAVE an average of four untreated cavities each, a total of 700,000,000 untreated cavities in the United States.

By the age of 50, one-half of those in the United States have developed gum ailments, which causes more tooth loss than cavities do. By the age of 65, nearly 100% have gum trouble.

The American Council on Education published these facts and others in a summary report of a two and one-half year survey of dental health, practice, education and research, called "Dentistry in the United States: Status, Needs and Recommendations." The complete 800-page report will be published about Feb. 1, 1961.

Recommendations for improvement of dental health include more widespread fluoridation of water and special Federal grant-in-aid to states, on a matching basis, to assist communities in meeting the cost of initiating fluoridation programs.

Organization of a national voluntary council on dental health is suggested to the dental profession to stimulate public interest.

• Science News Letter, 78:329 November 19, 1960

## ENTOMOLOGY

## Scientists Learn Facts of Life From Birds and Bees

► CAGED BIRDS that eat insects rather than seeds can be fed bee larvae, entomologists have found.

Researchers working with insect-eating birds in laboratories have had difficulty collecting enough insects for bird food. Drs. Robert Ficken and Robert Stein of Cornell University's ornithology laboratory, Ithaca, N. Y., have found that the birds like bee larvae.

Dr. Norman E. Gary of the entomology department developed special methods for raising and harvesting the larvae whereby a queen bee is placed in a cage where she lays about 1,500 eggs a day. In one week, the queen and her colony can supply a pound of larvae—a week's food for several small laboratory birds. The larvae are high in protein and vitamin A and D, and low in fat.

• Science News Letter, 78:329 November 19, 1960

## ANTHROPOLOGY

## Aborigines Beat Sir Walter Raleigh

► AUSTRALIAN aborigines were chewing tobacco centuries before Sir Walter Raleigh introduced it to Europe, the anthropologist Prof. J. B. Cleland reported in Adelaide, South Australia, after a journey to the Musgrave and Edward Ranges in the far northwest corner of South Australia.

Aborigines in the ranges still followed their ancestors' immemorial habit of chewing quids of native desert tobacco, Prof. Cleland said. They still carried the quids behind their ears.

Prof. Cleland, now 82, said: "I recently saw natives politely removing quids from their ears to offer other natives a chew, just as a white man offers a cigarette case to an acquaintance."

• Science News Letter, 78:329 November 19, 1960

## PHYSIOLOGY

## Find Mechanism in Brain That Controls Shivering

► THE MECHANISM that controls shivering on nippy days has been located.

Physiologist Douglas Stuart of the University of California Medical School, Los Angeles, has found a region in the rear portion of that part of the brain known as the hypothalamus that apparently initiates the shivering response.

When this region is electrically stimulated via a tiny electrode in experimental animals, they will shiver as if they were cold. When the same region is destroyed, the animals are unable to shiver in the presence of cold.

Shivering is nature's way of generating heat economically, Mr. Stuart points out. It produces heat without external work, such as is necessary in running or jumping up and down.

In order to warm up the body appreciably, shivering requires another action simultaneously. This involves a constricting of surface blood vessels, which helps preserve heat that would otherwise be dissipated into the air. This action also is controlled from the hypothalamus but from another portion of it.

• Science News Letter, 78:329 November 19, 1960

## PUBLIC SAFETY

## Fallout Shelter Guide Recommends Standards

► A FALLOUT SHELTER GUIDE for architects and engineers has been issued by the Office of Civil and Defense Mobilization. The guide recommends procedures and standards for evaluating shelter potentials of existing structures and for improving them. The same standards will apply for the building of new structures.

The methods for determining radiation penetration in structures were developed by the National Bureau of Standards. The guide covers everything from shielding to sanitation, ventilation, water and power supply and community survey procedures.

• Science News Letter, 78:329 November 19, 1960

## GENETICS

# Let's Talk Turkey

**U. S. Department of Agriculture scientists are trying to find the cause of infertility in turkeys. No turkey substitute is in the offing, Tove Neville reports.**

## See Front Cover

► THIS TIME OF THE YEAR turkeys have a traditional date with the Thanksgiving table, but some day in the future, the "gobble gobble" should sound from a much greater number of birds than it does today. And the birds for stuffing should be much cheaper to buy.

That will be the day poultry scientists have discovered the reason and remedied the cause why millions of dollars worth of turkey eggs each year are not fertilized.

About 60,000,000 turkey eggs are produced each year. These eggs are worth 25 cents to 35 cents apiece. Yet, a great many of the eggs have to be discarded because no poult is hatched from them.

In order to find the cause of infertility in the turkey, poultry scientists at the U. S. Department of Agriculture, Agricultural Research Service, Beltsville, Md., are experimenting with parthenogenetic, or fatherless, turkeys.

These fatherless turkeys are hatched from unfertilized eggs, laid by either virgin hens or hens that have been mated at an earlier date.

The female turkey, opposite to humans, produces both X and O chromosomes (O being roughly equivalent to Y in humans) that are then normally paired with the X-chromosomes from the male to produce either male (XX) or female (XO) offspring. If the X-chromosome doubles in the germ cell, these female turkeys produce a fatherless male offspring. If it doubles the O-chromosomes, the offspring dies because at least one X-chromosome is necessary for offspring to mature.

## Tend Toward Parthenogenesis

The Beltsville small white turkey has shown high tendency toward natural occurrence of parthenogenesis. After being vaccinated against fowlpox, these turkeys show an even higher tendency to double their X-chromosomes. Vaccination is believed to produce an agent in the blood that activates the double chromosome production, Dr. Marlow W. Olsen of the Beltsville research center told SCIENCE SERVICE.

The male turkeys produced by parthenogenesis, one of which is seen on the front cover of this week's SCIENCE NEWS LETTER, generally look like normally bred turkeys, with a few differences. Some are born with crooked legs, some with split wings. One has even been born with a displaced eye. Some of these turkeys have less of the male characteristics than ordinary turkeys; they have smaller spur development and smaller "beards"—a gray spot on the breast.

Other parthenogenetic turkeys have well

developed male characteristics, large spurs and "beards," and they are fertile. However, Dr. Olsen said that these birds do not mate with the females, nor do they show any inclination to do so.

Several of them have produced offspring, however, by artificial fertilization of ordinary female turkeys. The offspring from these parthenogenetic father turkeys appear to be normal in all respects.

The parthenogenetic turkeys are not expected to become commercially profitable. Even when selected Beltsville stock that shows particular tendency to parthenogenesis is bred in order to produce females that will double their chromosomes, only eight to ten percent of the eggs from such turkey females show true embryos.

## One in a Hundred Hatches

Out of these few, one in a hundred may hatch, the reason being that many defects prevent the embryos from developing in the egg. This is because the doubling of the chromosomes in the mother represents 100% inbreeding.

Dr. Olsen believes that the trait in the female turkey of doubling its chromosomes is in some way connected with the failure of many turkey eggs to be fertilized by the male. If this connection can be found, something may be done about it.

Early in the season, the male turkeys show high fertility and nearly all the eggs are naturally fertilized. Later in the season, the males' fertility decreases. It is possible, Dr. Olsen said, that the female tries to "make up" for this by doubling her chromosomes to produce young without benefit of the male.

He said there is also a possibility that some eggs might be fertilized by a male if the female had not already doubled her chromosomes and perhaps competed with the male in producing young. This may be a pathological trait in the turkeys.

## Made Genetic History

In working with parthenogenesis in turkeys, Dr. Olsen accidentally made genetic history. He fertilized female turkeys with sperm from Dark Cornish chicken roosters, in trying to encourage parthenogenesis in the turkeys. Instead he produced a true chicken-turkey hybrid, the first cross between two families of birds, *Meleagridae*, to which the turkey belongs, and *Phasianidae*, to which the chicken belongs. (See SNL, 78:291, 1960.)

However, the "chuk," as this hybrid bird is called, will not replace the turkey on the Thanksgiving table or even make up for the infertility in turkey production. It took some 2,900 eggs to produce a few live birds.

These birds have both physical and

mental defects. They have either crooked beaks or legs, sometimes both, and they have no more than half the intelligence of either parent stock.

A bare-necked chicken, sometimes called a "turken" by poultry producers, has been sold as a cross between a chicken and a turkey. This bird, which is not hybrid but a Transylvania chicken fowl, will hardly take the place of the Thanksgiving turkey on a large scale. It is a very poor egg-layer, Beltsville poultry scientist Joseph P. Quinn reported.

It is a very hardy bird, which can take care of itself and live on what it picks up around the farm, where it is generally allowed to run around loose.

The resemblance of the turken to the turkey is a bare collar around its neck. It is a rather large bird. The female generally weighs six to seven pounds, the male eight to nine pounds.

Poultry scientists in Venezuela are now trying to breed these fowl, as well as New Hampshire chicken fowl, for better egg-laying. When both breeds have improved, they hope to cross them and get a hardy chicken that will lay more eggs.

## The Turken Not "Perfect"

The turken, or Transylvania fowl, has not so far been admitted to the "standard of perfection" issued by the American Poultry Association, which sets the standard for breeds. To meet the standard, 90% of the progeny of a breed must be reasonably uniform in color and weight. The turken comes in many different sizes and colors and, although most are large, the baby chicks are not certain to be either the same size or color as their parents, Mr. Quinn said.

Another bird that has sometimes been taken to be a turkey is a cross between a guinea fowl and a chicken. Sometimes this cross has happened naturally; sometimes the two fowl have been bred. The cross is called a Guin-hen. It weighs five to six pounds and has a bare head.

• Science News Letter, 78:330 November 19, 1960

## Do You Know

Barley seeds from Abyssinia hold promise for American plant breeders in developing new varieties of barley that will resist yellow dwarf virus disease.

Potatoes can be stored at 55 degrees Fahrenheit for a year without sprouting by using the chemical CIPC—isopropyl N-(3-chlorophenyl) carbamate.

The ant has two stomachs: one for himself, and one a storehouse for food he shares with other ants.

• Science News Letter, 78:330 November 19, 1960

# Educational Meet Urged

► BEFORE THE UNITED STATES embarks upon any new large-scale aid programs, it should sponsor a world-wide conference to explore the scientific and educational needs of underdeveloped countries.

This was proposed in Los Angeles by Dr. Joseph Kaplan, professor of physics at the University of California at Los Angeles and chairman of the U.S. Committee for the International Geophysical Year.

He said that such a conference, at which African, Asian and Latin American scientists and engineers could present their special problems, would make American aid more effective and eliminate wasted effort.

Dr. Kaplan recently returned from the first international conference of this type, held at the Weizmann Institute of Science in Israel.

Russia will probably call a similar conference in the near future, he predicted.

On the basis of discussions at the Weizmann Institute conference, which brought together representatives from 40 countries,

Dr. Kaplan urges that American efforts be guided along the following lines.

1. Instead of sending high-powered experts to solve particular scientific or technological problems, the United States should let new countries develop their own experts by encouraging a sound educational system, from elementary school on up.

2. If technical experts are needed, they should come preferably from small advanced countries like Israel or Denmark, whose problems are similar to those of the newer nations, and whose motives are less likely to be suspect than those of Russia or the United States. However, in some areas, such as the use of visual teaching aids, only the larger countries will be able to supply the necessary know-how.

3. The type of conference proposed by Dr. Kaplan should be held regularly in different countries, sponsored by universities or scientific associations, rather than government agencies.

• Science News Letter, 78:331 November 19, 1960

## MEDICINE

# FDA Gets Bill of Health

► TOP SCIENTISTS have given the Food and Drug Administration a clean bill of health on the "scientific soundness" of its decisions regarding the certification of new drugs, including antibiotics, in recent years.

Secretary Arthur S. Flemming of the Department of Health, Education, and Welfare made public the scientific findings of the committee of eight, non-governmental scientists appointed by Dr. Detlev Bronk, president of the National Academy of Sciences.

The group was asked to review the decisions on drugs made by Dr. Henry Welch, recently resigned chief of FDA's antibiotics division. His resignation followed Congressional investigation of his income from writings and activities for drug companies.

Although the group approved the decisions, it called attention to "certain deficiencies in the quality and quantity of the data upon which they were based."

More than half the applications made to the FDA for drug certification fail to supply the required data, FDA Commissioner George P. Lerrick admitted. FDA policy is to return them to the manufacturer with a request for more complete data. Both large and small drug manufacturers have complained about this procedure.

"They think we're too strict," he said. "But if we err, we err on the side of safety." He said many drug manufacturers withdrew their applications rather than meet the data requirements asked by the FDA.

Secretary Flemming deplored the resistance on the part of some drug manufacturers to invest in research necessary to supply data required by FDA standards.

"We think the additional investment required is a small cost, indeed, to assure the safety of their product," he said.

The Secretary labeled the report of the scientists "definitely a vote of confidence"

in the persons working in the two units of the FDA dealing with the certification of new drugs and antibiotics. He refused to say whether he believed the report vindicated Dr. Welch.

He did not interpret as "implied criticism" the scientists' recommendation that staff members "should be supported to the utmost in their efforts to obtain submission of truly dependable scientific information on the efficacy and safety of the products." Staff members were so supported, Secretary Flemming said.

He conceded, however, that certain weaknesses have hampered the FDA in its task of protecting public health, as the scientists charged.

Both the Secretary and the scientists agree that a major weakness is the absence of statutory authority to require proof of the efficacy, as well as the safety, of all new drugs.

The scientists based their findings and recommendations on a review of only 29 of the thousands of applications processed by the FDA on drugs. The reviewed applications included three preparations of certifiable antibiotics, 14 of antibiotics classed as new drugs, and 12 of other new drugs. Those selected were only a fraction of the applications requested by the scientists and given them for review.

Secretary Flemming also announced that individual states already have notified Federal authorities of their plans to apply for aid under the new program passed during the last session of Congress of Federal-state aid for the medical care of the aged not receiving old-age assistance. He urged those states which have not already done so to take immediate action to implement the Federal statute and get benefits for their aged.

• Science News Letter, 78:331 November 19, 1960

## Could your friends solve THESE MATHEMATICAL PUZZLERS?

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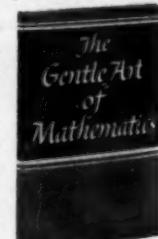
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# Books of the Week

For the editorial information of our readers, books received for review are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N.W., Washington 6, D.C.

**BREAKTHROUGHS IN SCIENCE**—Isaac Asimov—*Houghton*, 197 p., illus. by Karoly and Szanto, \$4. From Archimedes to Goddard, tells of the achievements of that small group of pioneering scientists whose discoveries made our present knowledge possible.

**THE CHILD BUYER**—John Hersey—*Knopf*, 258 p., \$4. A novel in the form of hearings before an imaginary Committee on Education, Welfare & Public Morality of a State Senate, investigating the conspiracy to purchase a male child.

**COMMUNITY OF FEAR**—Harrison Brown and James Real, foreword by Reinhold Niebuhr—*Center for the Study of Democratic Institutions*, 40 p., paper, single copies free upon request direct to publisher, Box 4068, Santa Barbara, Calif. Paper on the arms race as it relates to the technology of modern war.

**DEVELOPING CELL SYSTEMS AND THEIR CONTROL**—Dorothea Rudnick, Ed.—*Ronald*, 240 p., illus., \$8. Contributions to the Eighteenth Symposium of the Society for the Study of Development and Growth.

**THE DISCOVERY OF THE WORLD**—Albert Bettez—*Simon & Schuster*, 379 p., 303 illus., \$22.50; until Christmas \$17.50. Handsome volume about great explorers and the worlds they found, illustrated with reproductions from contemporary works of art.

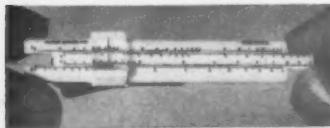
**EPIDEMIOLOGIC METHODS**—Brian MacMahon, Thomas F. Pugh and Johannes Ipsen—*Little*, 302 p., \$7.50. Summarizes concepts and sets down methods by which the distribution of any form of disease can be most profitably studied.

**THE EXPLORATION OF SPACE**—Arthur C. Clarke—*Fawcett*, rev. ed., 192 p., illus., paper, 50¢. Reprint of 1959 Harper edition.

**THE FIRST BOOK OF MYTHICAL BEASTS**—Helen Jacobson—*Watts*, 69 p., illus. by Lewis Zacks, \$1.95. Tells children about the strange beasts of folk tales and ancient myths.

**FOUNDATIONS OF ELECTRODYNAMICS**—Parry Moon and Domina Eberle Spencer—*Van Nostrand*, 314 p., illus., \$9.75. Textbook develops electrodynamics on a postulational basis and defines concepts in the most general way.

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**GENERAL ENDOCRINOLOGY**—C. Donnell Turner—*Saunders*, 3rd ed., 511 p., illus., \$9.50. Completely rewritten and updated, presents endocrinology as a basic science rather than a specialty, with emphasis on experimental aspects.

**GEOLoGICAL SURVEY RESEARCH** 1960, Part A: Synopsis of Geological Results. Part B: Short Papers in the Geological Sciences—Thomas B. Nolan, Dir.—*GPO*, 136 p., 515 p., paper, \$4.25. Scientific notes and summaries of investigations prepared by members of the Geologic Division.

**GEOLoGY**—Richard M. Peal—*Barnes & Noble*, 260 p., illus., paper, \$1.75. Introduction, in outline form, to the principles of physical and historical geology.

**GETTING THE MOST OUT OF YOUR TAPE RECORDER**—Herman Burstein—*Rider*, J. F., 170 p., illus., paper, \$4.25. Handbook for the audiophile, written in nontechnical language.

**GUIDE TO U.K.A.E.A. DOCUMENTS**—J. Roland Smith, Ed.—U.K. Atomic Energy Authority (*British Inform. Services*), 2nd ed., 32 p., 32¢. U.K.A.E.A. information and its availability, document series and referencing systems, bibliographies.

**THE INTELLIGENT MAN'S GUIDE TO SCIENCE**, Vol. I: The Physical Sciences. Vol. II: The Biological Sciences—Isaac Asimov, introd. by George W. Beadle—*Basic Books*, 853 p., illus., boxed set \$15; until Christmas \$11.95. Highly readable survey of basic advances in man's scientific understanding of life and the universe.

**THE INTERNATIONAL DICTIONARY OF APPLIED MATHEMATICS**—W. F. Freiberger and others, Eds.—*Van Nostrand*, 1173 p., diagrams, \$25. Defines terms and describes methods in the applications of mathematics to 31 fields of physical science and engineering, from Abam-pere to Zustandsumme. With multilingual indices in German, Russian, French and Spanish.

**INTERPLANETARY FLIGHT: An Introduction to Astronautics**—Arthur C. Clarke—*Harper*, rev. ed., 144 p., illus., \$3.50. Pioneer book in astronautics for the general reader brought up to date, with mathematical appendix.

**INTRODUCTION TO TEXTILES**—Evelyn E. Stout—*Wiley*, 363 p., illus., \$6.50. Describes some ninety natural, thermoplastic and non-thermoplastic man-made fibers, discusses wash-and-wear developments and texturizing processes.

**LABORATORY EXERCISES IN GENETICS**—Howard A. Royle—*Burgess*, 4th ed., 80 p., illus., paper, \$1.50. Part on Cytogenetics has been fully revised.

**LAND OF THE SNOWSHOE HARE**—Virginia S. Eifert—*Dodd*, 271 p., photographs by author, \$4. Takes reader to the coniferous forests of the northern states and Canada.

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**LAOS: Its People, Its Society, Its Culture**—Frank M. LeBar and Adrienne Suddard—*Hraf Press* (*Taplinger*), 294 p., maps, \$6.50. Human Relations Area Files survey of the small Southeast Asian country and its two million people, neighbors of Red China.

**LECTURES ON HAEMATOLOGY**—F. G. J. Hayhoe—*Cambridge Univ. Press*, 247 p., illus., \$11.50. Thirteen lectures for physicians and clinical pathologists on such subjects as transfusion hazards, haemoglobin variants and chemotherapy of leukemia.

**THE LIVING LABORATORY**: 200 Experiments for Amateur Biologists—James Donald and Rebecca Hutto Witherspoon—*Doubleday*, 256 p., illus. by authors, \$3.95. Describes safe and meaningful projects and experiments with animals and the human body; indexed, lists biological supply houses.

**LOOK TO THE WILDERNESS**—W. Douglas Burden—*Listle*, 251 p., photographs, \$6.50. Stories about wilderness in the North, in jungles, the Himalayas, Mongolia and many other places.

**THE MATHEMATICS OF RADIATIVE TRANSFER**—I. W. Busbridge—*Cambridge Univ. Press*, 143 p., \$5. Rigorous treatment of mathematical problems that arise in the theory of the transfer of radiation through the atmosphere of a star.

**MC CALL'S GOLDEN DO-IT BOOK**—Adapted by Joan Wyckoff, Nan Comstock, Ed.—*Golden Press*, 156 p., illus. by William Dugan, \$2.95. Not science, but full of ideas for things children can create with their hands.

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**MEN OF SPACE: Profiles of the Leaders in Space Research, Development and Exploration**, Vol. I—Shirley Thomas—*Chilton Co.*, 235 p., photographs, \$3.95. Biographical sketches, including Goddard, Stapp, von Neumann, von Braun, von Karmen and Van Allen.

**MICROTECHNIQUE: A Student's Guide to Sliding-Making**—Arthur W. Jones and John M. Carpenter—*Burgess*, rev. ed., 44 p., paper, \$2. Emphasizes student's independent study.

**MUSHROOMS OF THE GREAT SMOKIES: A Field Guide to Some Mushrooms and Their Relatives**—L. R. Hesler—*Univ. of Tenn. Press*, 289 p., photographs by author, \$5.50. Identifies 183 species for the inquiring amateur.

**NUCLEIC ACID OUTLINES**, Vol. I: Structure and Metabolism—Van R. Potter—*Burgess*, 292 p., \$5. Intended to provide a background and reference guide to the basic biochemistry of nucleic acids.

**101 SIMPLE EXPERIMENTS WITH INSECTS**—H. Kalmus—*Doubleday*, 194 p., illus., \$2.95. Projects for biology student and amateur scientist, exploring the physiology and behavior of insects.

**PEOPLE! Challenge to Survival**—William Vogt—*Sloane*, 257 p., \$4.50. Personal survey and assessment of the problems of excessive population growth in different parts of the world.

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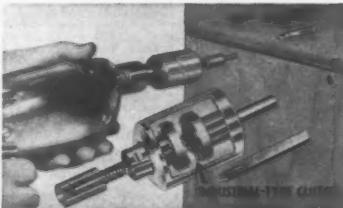
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## Books of the Week

(Continued from p. 332)

man—McGraw, 254 p., \$5.95. Psychologist's attempt to give the executive an understanding of how psychology can aid him.

PETROLOGY FOR STUDENTS: An Introduction to the Study of Rocks Under the Microscope—Alfred Harker—Cambridge Univ. Press, 8th rev. ed., 283 p., illus., paper, \$1.95. Reprint.

PLASMA ACCELERATION—Sidney W. Kash, Ed.—Stanford Univ. Press, 117 p., illus., \$4.25. Fourth Lockheed Symposium on Magnetohydrodynamics, held in December 1959.

PRINCIPLES OF CRIMINOLOGY—Edwin H. Sutherland and Donald R. Cressey—Lippincott 6th ed., 646 p., \$9.50. Includes bibliography of recent works on theory of differential association.

PRINCIPLES OF GENETICS—Eldon J. Gardner—Wiley, 366 p., illus., \$7.50. Textbook concentrates on the basic fundamentals of genetics and tells the story of the classical experiments.

PRINCIPLES OF ZOOLOGY: A Laboratory Manual—Philip A. Buscemi, Jean K. Lauber and Stewart C. Schell—Burgess, 100 p., illus., paper, \$2.25. To be used with beginning zoology courses.

PROBLEM-SOLVING METHODS IN SCIENTIFIC TEACHING—Lester C. Mills and Peter M. Dean—Teachers College, 88 p., paper, \$1.50. On the use of problem-solving as a technique for teaching earth sciences, biological and physical sciences.

QUALITATIVE THEORY OF DIFFERENTIAL EQUATIONS—V. V. Nemtsev and V. V. Stepanov—Princeton Univ. Press, 523 p., \$12.50. Translation of the latest edition of important Russian work.

RAND McNALLY BOOK OF NATIONS—Rand McNally, 94 p., illus., maps, cloth \$4.95; paper board \$3.95. Colorful geographical almanac for children. Includes the new African states.

RUSSIAN SCIENCE IN THE 21ST CENTURY—Sergei Goushev and Mikhail Vassiliev, Eds.—McGraw, 222 p., photographs, \$4.95. Soviet journalists report interviews with 29 Russian scientists and technologists about trends and projects in their fields.

SPACE ROCKETS AND MISSILES—Raymond F. Yates and M. E. Russell—Harper, 337 p., photographs, \$3.50. Informative review and descriptions of present and planned rockets, missiles and space probes, with glossary and list of launchings.

SPACE TRAJECTORIES: Symposium Sponsored by American Astronautical Society, A.R.P.A. and Radiation Inc.—T. C. Helvey, Chinm-Academic, 298 p., illus., \$12. Comprehensive survey of space trajectory analysis in 1960.

THE SQUEEZE: Cities without Space—Edward Higbee, foreword by Fairfield Osborn—Morrow, 348 p., \$5.95. Geographer discusses the present patterns and desirable changes in making metropolitan United States more habitable.

THERMOELECTRIC MATERIALS AND DEVICES—Irving B. Cadoff and Edward Miller, Eds.—Reinhold, 344 p., illus., \$9.75. Theory of thermoelectric processes and circuits, followed by survey of recent progress in the development of materials for thermoelectric devices.

ULTRAVIOLET GUIDE TO MINERALS—Sterling Gleason—Van Nostrand, 244 p., illus. in color, \$6.95. A working manual for the use of ultraviolet light in locating and recognizing minerals, includes field identification charts.

UNESCO COPYRIGHT BULLETIN, Vol XIII, No. 1, 1960—Unesco Pub. Center (N.Y.), 214 p., paper, \$2.40. Reports on fourth session of International Governmental Copyright Committee.

WATER FOR THE WORLD—Elizabeth S. Halfman—Longmans, 213 p., illus. by J. MacDonald, \$3.75. Story about water and what it means in the lives of people, here and abroad.

\* Science News Letter, 78:332 November 19, 1960

## TECHNOLOGY

**Nuclear Ship Propulsion Symposium in Italy**

► THE RUSSIAN 16,000-ton nuclear ice-breaker "Lenin" is now active in the Arctic, and the United States nuclear cargo passenger ship "Savannah" soon will be in operation.

Plans for nuclear ships in other countries are going ahead rapidly because of practical advantages such as extended range without refueling.

Safety questions, a major consideration, prompted an international symposium on Nuclear Ship Propulsion With Special Reference to Nuclear Safety, sponsored by the International Atomic Energy Agency.

The symposium was held Nov. 14 to 18 in Sicily, with 12 countries participating.

• Science News Letter, 78:335 November 19, 1960

## ENGINEERING

**Army Develops "Laughing Gas" Unit**

► A PORTABLE "LAUGHING GAS" generator for use by medical units under combat conditions has been developed by the U.S. Army Engineer Research and Development Laboratories. It is capable of producing 40 pounds an hour of liquid nitrous oxide, an anesthetic agent commonly called "laughing gas."

The comparatively lightweight plant will enable the Army to minimize, if not eliminate, the necessity of shipping returnable cylinders of compressed gas to and from various theaters of operation. It consists of two skid-mounted units that can be carried by truck, train or plane.

• Science News Letter, 78:335 November 19, 1960

## TECHNOLOGY

**Ship to Shore Hose Unloads Tanker**

► SHIP-TO-SHORE TRANSFER of fuels through a continuous, floating, spliceless hose is being inaugurated in the Philippines. An inter-island tanker is making the first commercial application of the new hose.

The tanker, Caltex Luzon, owned by Caltex (Philippines) Inc., can anchor offshore and unload through a 500-foot continuous length of four-inch floating hose. Then the hose can be reeled aboard ship.

• Science News Letter, 78:335 November 19, 1960

**Questions**

**GENETICS**—What is the effect of vaccination against fowlpox on turkeys? p. 330.

**MEDICINE**—What were the enzymes used in diagnosis of heart disease? p. 323.

**Photographs:** Cover, Fremont Davis; p. 323, (top) University of California, (bottom) Atomic Energy Commission; p. 325, Grumman Aircraft Engineering Corporation; p. 327, F. C. Livingston; p. 336, The Stanley Works.

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# New Machines and Gadgets

For sources of more information on new things described, send a self-addressed stamped envelope to SCIENCE NEWS LETTER, 1719 N St., N.W., Washington 6, D.C., and ask for Gadget Bulletin 1066. To receive this Gadget Bulletin without special request each week, remit \$1.50 for one year's subscription.

**FLAT-TIRE FIXER** repairs and pumps up flat tires easily. The aerosol container holds a sealant combination of butyl rubber and plastic and compressed air. Attached to the tire valve, the device seals the puncture and inflates the flat in about two minutes. No jack is needed.

• Science News Letter, 78:336 November 19, 1960

**TAPERED GAS TANKS**, smaller at the bottom than at the top, more readily fit the contours of a boat. Many boat companies install them as original equipment with filling tubes and vents. Longer cruising ranges are possible with the increased gasoline capacity.

• Science News Letter, 78:336 November 19, 1960

**VINYL CEILING PANELS**, with circular holes forming an open grid, diffuse light from a lighting system installed above the panels. The non-combustible panels reduce glare, thus permitting higher illumination overall. They were especially designed to give proper lighting for optical-type gauges and instruments.

• Science News Letter, 78:336 November 19, 1960

**CLOSET BAR AND GLIDES**, shown in the photograph, prevent "hanger-tangle." The nylon glides are easily inserted, even after the bar has been mounted, and they are just the right distance apart to keep



clothes neatly separated. The nickel-plated steel bars are available in four lengths: 18, 30, 48 and 72 inches, extendable respectively to 30, 48, 72 and 120 inches.

• Science News Letter, 78:336 November 19, 1960

**SOIL MOISTURE GAUGE** tells the amount of moisture in the soil at the root zone of plants. To use, the thermometer-type gauge is filled with water to a "fill"



line and then the gauge's porous ceramic tip is pushed into the earth.

• Science News Letter, 78:336 November 19, 1960

**SOLAR CELL MODULES**, self-contained power-generating units mounting five shingled, silicon solar cells, are now available for the home hobbyist or experimenter. Terminals and battery polarity markings are located on tabs at the end of each plastic case. The modules may be used in combinations to power radios, relays, or for automatic switching devices.

• Science News Letter, 78:336 November 19, 1960

**REMOTE-FOCUS PROJECTOR** permits focusing as well as changing slides with a remote control device. A press of a remote control button moves the lens in or out for sharp focus. The focusing unit also contains a beam of light that can be used to point out details on the screen.

• Science News Letter, 78:336 November 19, 1960

**ROLL-FORM FIBERGLASS PANELING**, cross-corrugated and reinforced, speeds the installation of translucent skylights, sidelights and awnings. The new material comes in 50-foot rolls, 40 inches wide, in seven colors. The flexible material is shatterproof, weather-resistant and impervious to corrosion.

• Science News Letter, 78:336 November 19, 1960

## Nature Ramblings

► THAT WONDERFUL BIRD, the pelican, has been said to "fly with the dignity of a Roman senator and dive with the grace of a cow!" While this description is picturesque, to say the least, it is also quite accurate. A stately line of brown pelicans skimming the water, their wing beats slow and precise, is as graceful as a ritual dance.

On the other hand, the sudden plunge of one of these huge birds from a height of 15 to 30 feet into the sea is like the fall of a big rock. Water splashes all around, and the sound of the impact can be heard for a considerable distance.

The brown pelican's dive—a common sight along the south Atlantic and Gulf coasts—is its usual way of catching food. Large and small fishes seen from the air furnish the target, and in about one out of three tries the brown pelican emerges with a meal in his pouch.

If a dive is unsuccessful, the big bird usually takes to the air immediately. But if a fish is caught, he usually sits quietly on the water for a few minutes with his bill pointed downwards. This serves the im-

### The Wonderful Bird



portant job of draining the big pouch of water. Then the head is thrown back and the catch swallowed.

Having to wait for that oversize pouch to drain has cost many a pelican his hard-earned meal. This is the time when frigate birds, gulls and other "robber birds," swoop down on the pelican to snatch the fish from the big bird's mouth!

Not all pelicans are high diving experts, however. The white pelican, which breeds from British Columbia south to California and Texas, seldom if ever dives for its meals but fishes by "teamwork."

When a school of fish is sighted, these pelicans may either form a circle to drive the fish into a compact pile or they make a semicircle to force the fish into shallow water. Once the fish are bunched, the pelicans sit among them and scoop them up in their pouches.

Pelicans are excellent and efficient fishers. Complaints have often been made that these birds are serious competitors for commercial species, leading to reduced catches by the fishermen.

Studies of the food habits of the brown pelican do not support such criticism. One scientist reported that of over 3,000 fish found in a pelican rookery, only 27 were commercially important species.

The fish-eating habit of pelicans has made them of great value to man in certain areas. The great guano (bird excrement used for fertilizer) deposits of the islands off western South America, worth millions of dollars annually, are due in large part to tremendous concentration of pelicans there.

—HORACE LOFTIN

• Science News Letter, 78:336 November 19, 1960

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